

1. A reverse thermally viscosifying composition comprising:
a linear block copolymer, wherein at least a first block comprises a polyoxyalkylene
having a hydrophobic region and a hydrophobic region, said polyoxyalkylene capable of
aggregation in solution, and at least a second block comprises a biocompatible polymer or
5 oligomer, dispersed in an aqueous medium, said composition characterized in that it
viscosifies in response to an environmental stimulus.

2. The composition of claim 1, wherein said polyoxyalkylene comprises
poloxyethylene and poloxypropylene.

10

3. The composition of claim 1, wherein said polyoxyalkylene comprises an alkyl
poloxamer of the formula, R-(CH₂CH₂)_nO-, where R is an alkylene or arylalkylene moiety and
n is in the range of 5 to 100.

15 4. The composition of claim 1, wherein the biocompatible polymer or oligomer is
a bioadhesive or mucoadhesive.

5. The composition of claim 1, wherein the biocompatible polymer or oligomer
comprises a poly(vinylcarboxylic acid) and derivatives thereof.

20

6. The composition of claim 5, wherein the poly(vinylcarboxylic acid) is selected
from the group consisting of acrylic acid, substituted acrylic acid, methacrylic acid,
substituted methacrylic acids, acids, and ionized forms thereof.

7. The composition of claim 1, wherein the polyoxyalkylene comprises a triblock polymer of polyoxyethylene (POE) and polyoxypropylene (POP) having the formula (POP)_a(POE)_b(POP)_a, where a is in the range of 10-50 and b is in the range of 50-70.

5 8. The composition of claim 1, wherein the viscosification occurs at a temperature in the range of about 22 to 40°C.

9. The composition of claim 1, wherein the viscosification occurs at a temperature in the range of about 30 to 37°C.

10

10. A block copolymer, comprising:
at least one polymer or oligomer block including a polyoxyalkylene; and
at least one block comprises a biocompatible polymer or oligomer, wherein said block polymer is a linear block copolymer.

15

11. The block copolymer of claim 10, having the formula selected from the group consisting of:

(CH₂CHR)_n-Q-(CH₂CH₂O)_x(CH₂CH(CH₃)O)_y(CH₂CH₂O)_z-Q-(CH₂CHR)_m, where Q is a C-C, C-O, C(O)-NH, S-C, C(O)-O functionality and the like, R is a carboxyl, and n, m, x and y, are independently selected and in the range of 1 and 1000.

20

12. A pharmaceutical composition, comprising:

25 a reverse thermally viscosifying composition including a linear block copolymer, wherein at least one block comprises a poloxamer; and at least one block comprises a biocompatible polymer or oligomer, in an aqueous medium; and

an active agent which imparts a pharmaceutic or cosmetic effect, said composition characterized in that it viscosifies in response to an environmental stimulus.

13. The composition of claim 1 or 12, wherein the reversibly gelling composition
5 is present in an amount in the range of about 0.01 to 20 wt%.

14. The pharmaceutic composition of claim 1 or 12, wherein the reversibly gelling composition is present in an amount in the range of about 0.1 to 10 wt%.

10 15. The pharmaceutic composition of claim 12, wherein the reverse thermal viscosifying composition is present in a concentration in the range of 0.01-1 wt% of total pharmaceutical composition.

15 16. The pharmaceutical composition of claim 12, wherein said composition further comprises a pharmaceutic agent selected from the group consisting of humectants and emollients.

20 17. The pharmaceutic composition of claim 12, wherein the pharmaceutic composition takes a form selected from the group consisting of lotions, creams, sticks, roll-on formulations, sprays, aerosols, pad-applied formulations and masks.

18. The pharmaceutic composition of claim 12, wherein the pharmaceutical agent is absorbable through skin or mucosal membranes.

19. The composition of claim 1 or 12, wherein the aqueous-based medium is selected from the group consisting of water, salt solutions and water with water-miscible organic compound(s).

5 20. The pharmaceutic composition of claim 12, wherein the pharmaceutical agent is absorbable through vaginal mucosal membrane.

21. The pharmaceutic composition of claim 12, wherein the pharmaceutical agent is absorbable through nasal mucosal membrane.

10 22. The pharmaceutic composition of claim 12, wherein the pharmaceutical agent is absorbable through rectal mucosal membrane.

15 23. The pharmaceutic composition of claim 12, wherein the pharmaceutical agent is absorbable through otic mucosal membrane.

24. The pharmaceutic composition of claim 12, wherein the pharmaceutical agent is absorbable through ophthalmic mucosal membrane.

20 25. The pharmaceutic composition of claim 12, wherein the pharmaceutical agent is absorbable through esophageal mucosal membrane.

26. The pharmaceutic composition of claim 12, wherein the pharmaceutical agent is absorbable through oral cavity membrane.

27. The pharmaceutic composition of claim 23, wherein the pharmaceutically active agent is selected from the group consisting of miotics, sympathomimetics, beta-blockers, prostaglandin derivatives, muscarinic antagonists, anti-infectives and carbonic anhydrase inhibitors.

5

28. The pharmaceutic composition of claim 12, further comprising acceptable antioxidants.

10 29. The pharmaceutic composition of claim 12, further comprising isotonizing agents.

30. The pharmaceutic composition of claim 12, further comprising a buffer.

15 31. The pharmaceutic composition of claim 12, further comprising preservative

32. The pharmaceutic composition of claim 20, wherein the pharmaceutically active agent is selected from the group consisting of natural and synthetic hormones, anti-fungals, contraceptives, anti-yeast agents, steroids, moisturizers, spermicides, anti-virals, analgesics and anaesthetics.

20

33. The pharmaceutic composition of claim 12, wherein the pharmaceutically active agent is selected from the group consisting of anti-ulcer agents, sucralfate, H2-blocking agents, antipyretics, analgesics, antacids, antiflatulents, anticonvulsants, antidiarrheals, antifungals, anihypertensives, antihistamines, antipruritics, antiinfectives, antinauseants, 25 antireflux agents, antispasmodics, contraceptives, hormonals, steroids, cough/cold remedies,

diuretics, laxatives, tranquilizers, muscle relaxants, mineral supplements, sedatives, vitamins and mixtures thereof.

34. The pharmaceutic composition of claim 33, further comprising flavoring.

5

35. The pharmaceutic composition of claim 21 or 23, wherein the pharmaceutical composition is applied in the form of drops.

10 36. The pharmaceutic composition of claim 21, wherein the pharmaceutical composition is applied as a spray.

15 37. The pharmaceutic composition of claim 21, wherein the pharmaceutically active agent is selected from the group consisting of decongestants, antihistamines, anti-osteoporosis agents, hormones, antineoplastic agents, Parkinsonism drugs and vaccines.

38. The pharmaceutic composition of claim 12, wherein the reversible thermal viscosifying composition is incorporated into a tablet for oral administration.

20 39. The pharmaceutic composition of claim 12, wherein the pharmaceutic composition is injectable.

25 40. The pharmaceutic composition of claim 16, wherein the pharmaceutically active agent is selected from the group consisting of anti-ulcer agents, sucralfate, H2-blocking agents, antipyretics, analgesics, antacids, antiflatulents, anticonvulsants, antidiarrheals, antifungals, anihypertensives, antihistamines, antiprutitics, antiinfectives, antinauseants,

antireflux agents, antispasmodics, contraceptives, hormonals, steroids, cough/cold remedies, diuretics, laxatives, tranquilizers, muscle relaxants, mineral supplements, sedatives, vitamins and mixtures thereof; and

further comprising flavoring.